



Is Quality Really Free?

Cost and Benefits of GQM measurement programmes

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Annoying questions:

- How long does it take us to: solve a bug, build a feature, or write a page?
- Why is our software late?
- Which part of the product has been inspected?
- Where are we today, and how far to go?
- How many defects do we (probably) release to our customer?
- What is our test coverage?
- Did our performance improve last year?

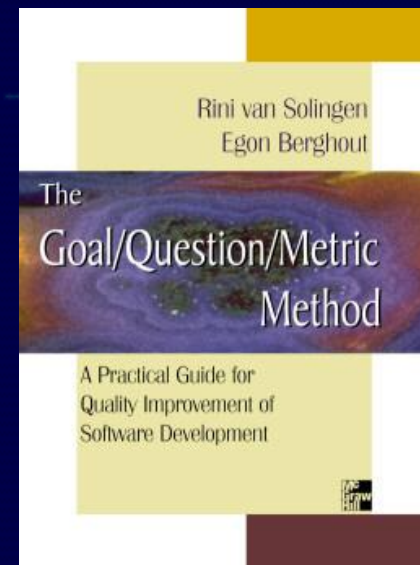
Who am I...

- Education
 - TU Delft: Master in Informatics
 - TU Eindhoven: PhD in Management Science
- Schlumberger RPS/TOKHEIM
 - QA for systems development
- Fraunhofer IESE
 - Department head QPE (15)
- CMG TTI
 - Principal consultant “SW Product and Process Improvement”



Publications

- Books
 - GQM book, McGraw-Hill, '99
 - Several chapters in SE/SPI books
- Journals
 - Informatie, '96, IEEE Software, '98 (2), Quality & Reliability Eng. Int., '99 (2), Information & SW Technology, '00
- Keynotes
 - UKSMA, London, '97, NASA-SEL, Washington, '99, DASMA, Düsseldorf, '00, FESMA, Heidelberg, '01



What is SPI?

- Why?
- Whereto?
- How?
- For whom?
- By whom?
- When to stop?

What is SPI? – A definition

The set of activities with which the people in a sw-organisation attempt to reach:

- more *efficient* and/or *effective* business performance wrt.
 - cost,
 - delivery time and/or
 - quality,
- by means of *changing* the software process.

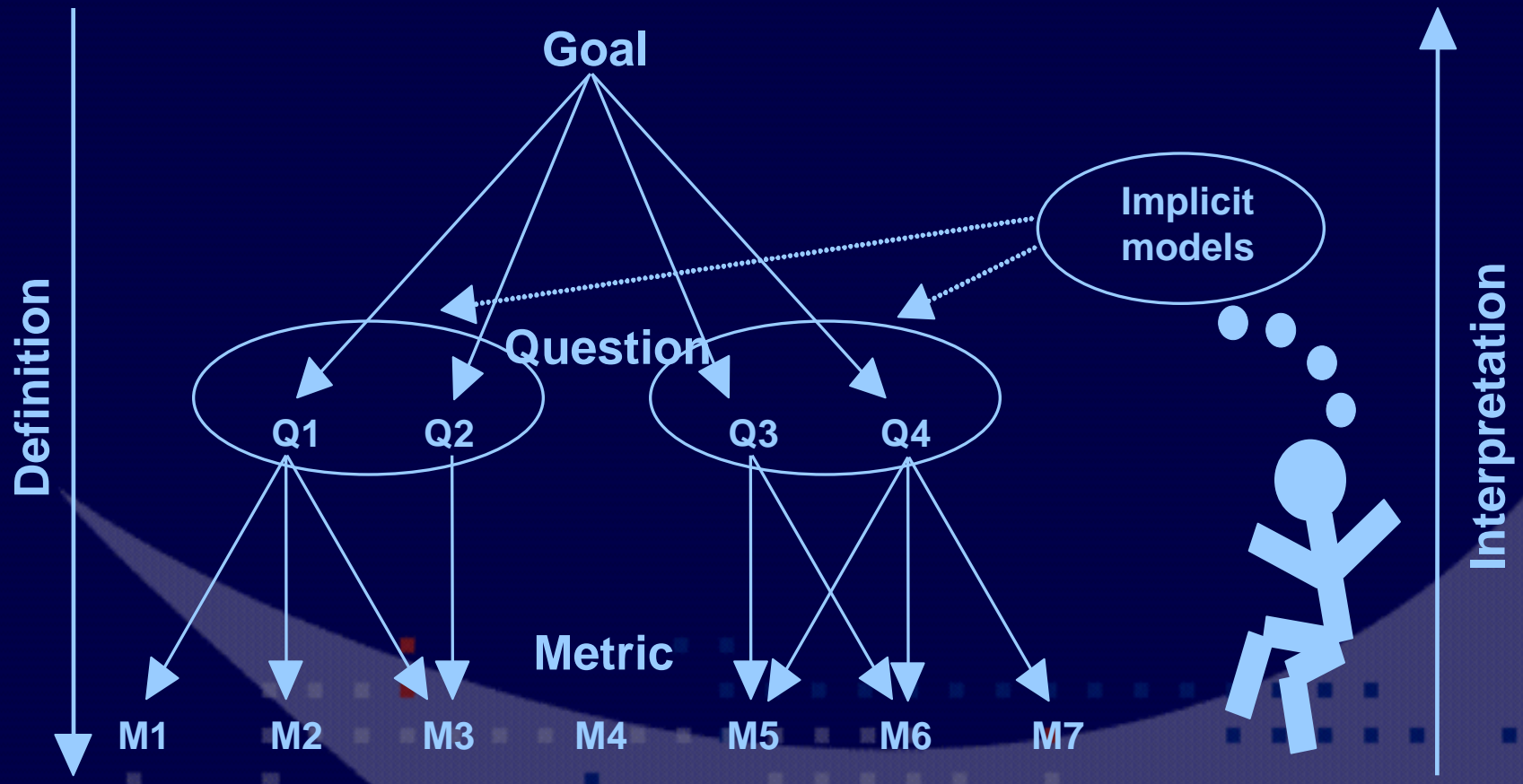
Don't forget:

- A *change* is not by definition an *improvement*
- An improvement is a change for which has been *proven* to result in better business performance
- Create proof by *measurement*

Measurement

- Required to show improvement
- Basis of any engineering discipline
- CMMi-level 2 Key Practice
 - Goal-oriented metrics definition
 - Analysis and feedback
- Often not done in SPI programmes

What is GQM?



Return on Investment (ROI)

- ROI of SPI
 - Obligated to measure
 - Often NOT done
 - Several publications available
- ROI of measurement
 - Distinct from SPI-ROI
 - Keep measurement efforts low
 - Invest efforts in improvement

Cost of Measurement

- Yearly effort
 - SW team Max. 2% (FI 5.000)
 - GQM team Max. 33% (FI 65.000)
 - Coaching Max. FI 50.000
- Equipment
 - Negligible
- Training
 - 1–5 days Max. FI 10.000

Benefits of Measurement

- Direct benefits
 - Attained goals
 - Effort & cost saved, quality increase
- Indirect benefits
 - Motivation (ask project leader)
 - Early delivery (ask marketing)
...or delay reduction
 - Higher quality (ask marketing)

Example: IEEE SW 09/98 project (1)

- Cost

• SW team:	80 hours	FI 10.000
• GQM team:	240 hours	FI 30.000

- Benefits

• SW team:	260 hours	FI 32.500
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- ROI

• GQM team:	60 hours	FI 7.500
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• SW-team: 1:3

• Total: 1:1

Example: IEEE SW 09/98 project (2)

- Cost

• SW team:	80 hours	FI 10.000
• GQM team:	240 hours	FI 30.000

- Benefits

• SW team:	260 hours	FI 32.500
	1 week earlier	FI 45.000
	Updated doc.	FI 30.000
	Motivation/QA	FI 25.000
	Spin-off	FI 200.000
• GQM team:	60 hours	FI 7.500

- ROI

• SW-team:	1:34
• Total:	1:9

Example: IEEE SW 09/98 project (3)

- Direct benefits covered cost
- SW team had direct benefits
- Indirect benefits were appreciated by the sw-team
- Calculating to financials
 - Show ROI
 - Show that indirect benefits are often much higher and appreciated

GQM ROI

- Dependent on project
 - Goal, Experience, Stakeholders
- Cost
 - Max. 2% of sw team's effort
 - Total cost 3–9 p.months
- Benefits
 - Always covering sw team effort
 - Mostly break even on direct benefits
 - Indirect benefits create major profit

Conclusions

- Focus measurements (GQM)
 - On the business/improvement goals
 - Keep measurement efforts low
- Measure measurement
 - Keep track of the cost
 - Measure benefits. It's not that hard
 - Estimate and communicate ROI
- Experience: GQM-ROI always plus

Links

- <http://www.gqm.nl/>
- <http://www.profes.org/>
- <http://www.psmc.com/>
- <http://user.cs.tu-berlin.de/~fetcke/metrics-sites.html>
- <http://irb.cs.uni-magdeburg.de/sw-eng/us/>

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